CLAIMS

1. A method for forming a field effect transistor over a substrate, said method comprising steps of:

forming an interfacial oxide layer over a channel region of said substrate, said interfacial oxide layer having a first thickness;

forming an oxygen-attracting layer over said interfacial oxide layer;

forming a high-k dielectric layer over said oxygen-attracting layer;

forming a gate electrode layer over said high-k dielectric layer;

wherein said oxygen-attracting layer prevents said first thickness of said interfacial oxide layer from increasing.

2. The method of claim 1 wherein said interfacial oxide layer prevents a high-k element from diffusing into said channel region.

3. The method of claim 1 wherein said step of forming said oxygen-attracting layer comprises forming a metal layer over said interfacial oxide layer, said metal layer combining with oxygen to form a silicate.

4. The method of claim 1 wherein said oxygen-attracting layer is selected from the group consisting of zirconium silicate and hafnium silicate.

5. The method of claim 1 wherein said high-k dielectric layer is selected

from the group consisting of hafnium oxide, hafnium silicate, zirconium silicate, and zirconium oxide.

6. The method of claim 1 wherein said first thickness of said interfacial oxide layer is between approximately 4.0 Angstroms and approximately 5.0 Angstroms.

7. The method of claim 1 wherein a second thickness of said oxygen-attracting layer is approximately 5.0 Angstroms.

8. A field effect transistor situated on a substrate, said field effect transistor comprising:

a high-k dielectric layer situated over a channel region in said substrate;

an oxygen-attracting layer situated over said high-k dielectric layer;

a gate electrode layer situated over said oxygen-attracting layer;

wherein said oxygen-attracting layer prevents an interfacial oxide layer from forming between said high-k dielectric layer and said substrate.

9. The field effect transistor of claim 8 wherein said high-k dielectric layer and said oxygen-attracting layer form a high-k gate dielectric stack.

10. The field effect transistor of claim 8 wherein said oxygen-attracting

layer comprises a high-k dielectric.

11. The field effect transistor of claim 10 wherein said high-k dielectric is selected from the group consisting of zirconium oxide and hafnium oxide.

12. The field effect transistor of claim 8 wherein said high-k dielectric layer is selected from the group consisting of zirconium oxide and hafnium oxide.

13. The field effect transistor of claim 8 wherein said oxygen-attracting layer has a thickness of approximately 5.0 Angstroms.

14. A method for forming a field effect transistor over a substrate, said method comprising steps of:

forming a high-k dielectric layer over a channel region of said substrate;

forming an oxygen-attracting layer over said high-k dielectric layer;

forming a gate electrode layer over said oxygen-attracting layer;

wherein said oxygen-attracting layer prevents an interfacial oxide layer from forming between said high-k dielectric layer and said substrate.

15. The method of claim 14 wherein said step of forming said oxygen-attracting layer comprises forming a metal layer over said high-k dielectric layer, said metal layer combining with oxygen from said high-k dielectric layer to form a high-k

dielectric.

16. The method of claim 14 wherein said oxygen-attracting layer and said high-k dielectric layer form a high-k gate dielectric stack.

17. The method of claim 14 wherein said oxygen-attracting layer is selected from the group consisting of zirconium oxide and hafnium oxide.

18. The method of claim 14 wherein said high-k dielectric layer is selected from the group consisting of zirconium oxide and hafnium oxide.

19. The method of claim 14 wherein said oxygen-attracting layer has a thickness of approximately 5.0 Angstroms.

20. The method of claim 14 wherein said high-k dielectric layer has a thickness of between approximately 20.0 Angstroms and approximately 30.0 Angstroms.